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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: DR. CHRISTOF EBERSPÄCHER ET AL.

Serial No.: Not Yet Assigned

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Title: SYNCHRONIZER RING

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend claims 1-14 of this application as follows prior to examination:

1. (Amended) A synchronizer ring comprising:

a ring body which has a sliding region, and

a wear-resistant tribological coating with which the sliding region is provided,

wherein the tribological coating is a thermally sprayed coating which contains a maximum of approximately 40% by weight of a solid lubricant.

2. (Amended) The synchronizer ring according to Claim 1, wherein the solid lubricant is titanium dioxide (TiO_2), calcium fluoride (CaF_2), hexagonal boron nitride (h-BN), graphite, lead (Pb) or molybdenum sulphide (MoS_2) or any desired mixture of these substances.

3. (Amended) The synchronizer ring according to Claim 1, wherein the solid lubricant has a particle size of up to approximately 200 µm.

4. (Amended) The synchronizer ring according to Claim 1, wherein the thermally sprayed coating furthermore contains tin and/or zinc and/or silicon and/or nickel and/or magnanese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

5. (Amended) The synchronizer ring according to Claim 1, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

6. (Amended) A process for applying a wear-resistant tribological coating to a sliding region of a synchronizer ring comprising thermally spraying the coating using a spraying compound which contains at most approximately 40% by weight of a solid lubricant.

7. (Amended) The process according to Claim 6, wherein the solid lubricant used is titanium dioxide (TiO_2), calcium fluoride (CaF_2), hexagonal boron nitride (h-BN), graphite, lead (Pb) or molybdenum sulphide (MoS_2) or any desired mixture of these solid lubricants.

8. (Amended) The process according to Claim 6, wherein the spraying compound used furthermore contains tin and/or zinc and/or silicon and/or nickel and/or manganese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

9. (Amended) The process according to Claim 6, wherein the coating is thermally sprayed by at least one of a wire arc spraying process and a flame spraying process.

10. (Amended) The process according to Claim 9, wherein the spraying compound is a filled wire which has a filling which contains a solid lubricant.

11. (Amended) The process according to Claim 24, wherein the filled wire has a covering of copper and/or tin and/or zinc and/or aluminum and/or their alloys.

12. (Amended) The process according to Claim 6, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

13. (Amended) The process according to Claim 6, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

14. (Amended) The process according to Claim 6, wherein the coating is stamped after it has been applied.

Please add the following new claims:

--15. The synchronizer ring according to Claim 3, wherein the solid lubricant has a particle size between 50 µm and 180 µm.

16. The synchronizer ring according to Claim 2, wherein the thermally sprayed coating furthermore contains tin and/or zinc and/or silicon and/or nickel and/or magnanese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

17. The synchronizer ring according to Claim 3, wherein the thermally sprayed coating furthermore contains tin and/or zinc and/or silicon and/or nickel and/or magnanese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

18. The synchronizer ring according to Claim 2, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

19. The synchronizer ring according to Claim 3, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

20. The synchronizer ring according to Claim 4, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

21. The synchronizer ring according to Claim 15, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

22. The synchronizer ring according to Claim 16, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

23. The synchronizer ring according to Claim 17, wherein the thermally sprayed coating has a porosity of up to approximately 30%

24. The process according to Claim 10, wherein the filling also contains tin and/or zinc and/or silicon and/or nickel and/or manganese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

25. The process according to Claim 7, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

26. The process according to Claim 8, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

27. The process according to Claim 9, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

28. The process according to Claim 10, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

29. The process according to claim 11, wherein, in addition to a filled wire, a solid wire is used as the spraying compound.

30. The process according to Claim 12, wherein said solid wire is made from CuAl8.

31. The process according to Claim 25, wherein said solid wire is made from CuAl8.

32. The process according to Claim 26, wherein said solid wire is made from CuAl8.

33. The process according to Claim 27, wherein said solid wire is made from CuAl8.

34. The process according to Claim 28, wherein said solid wire is made from CuAl8.

35. The process according to Claim 29, wherein said solid wire is made from CuAl8.

36. The process according to Claim 7, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

37. The process according to Claim 8, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

38. The process according to Claim 9, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

39. The process according to Claim 10, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

40. The process according to Claim 11, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

41. The process according to Claim 12, wherein the sliding region, prior to the application of the coating, is roughened and degreased.

42. The process according to Claim 13, wherein the sliding region is roughened by sand-blasting.

43. The process according to Claim 36, wherein the sliding region is roughened by sand-blasting.

44. The process according to Claim 37, wherein the sliding region is roughened by sand-blasting.

45. The process according to Claim 38, wherein the sliding region is roughened by sand-blasting.

46. The process according to Claim 39, wherein the sliding region is roughened by sand-blasting.

47. The process according to Claim 40, wherein the sliding region is roughened by sand-blasting.

48. The process according to Claim 41, wherein the sliding region is roughened by sand-blasting.

49. The process according to Claim 7, wherein the coating is stamped after it has been applied.

50. The process according to Claim 8, wherein the coating is stamped after it has been applied.

51. The process according to Claim 9, wherein the coating is stamped after it has been applied.

52. The process according to Claim 10, wherein the coating is stamped after it has been applied.

53. The process according to Claim 11, wherein the coating is stamped after it has been applied.

54. The process according to Claim 12, wherein the coating is stamped after it has been applied.

55. The process according to Claim 13, wherein the coating is stamped after it has been applied.--

REMARKS

The foregoing amendments are being made in order to improve the form of the claims for examination and eliminate multiple claim dependencies.

Respectfully submitted,

April 3, 2001

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manganese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

5. (Amended) [Synchronizer] The synchronizer ring according to [one of the preceding claims, characterized in that] Claim 1, wherein the thermally sprayed coating has a porosity of up to approximately 30%.

6. (Amended) [Process] A process for applying a wear-resistant tribological coating to [the] a sliding region of a synchronizer ring[, characterized in that] comprising thermally spraying the coating [(4) is thermally sprayed,] using a spraying compound which contains at most approximately 40% by weight of a solid lubricant [being used].

7. (Amended) [Process] The process according to Claim 6, [characterized in that] wherein the solid lubricant used is titanium dioxide (TiO_2), calcium fluoride (CaF_2), hexagonal boron nitride (h-BN), graphite, lead (Pb) or molybdenum sulphide (MoS_2) or any desired mixture of these solid lubricants.

8. (Amended) [Process] The process according to Claim 6, [characterized in that a] wherein the spraying compound [is] used [which] furthermore contains tin and/or zinc and/or silicon and/or nickel and/or manganese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon.

9. (Amended) [Process] The process according to Claim 6, [characterized in that] wherein the coating is [applied in] thermally sprayed by at least one of a wire arc spraying process [and/or] and a flame spraying process.

10. (Amended) [Process] The process according to Claim 9, [characterized in that] wherein the spraying compound [used] is a filled wire which has a filling which contains a solid lubricant [and, if appropriate, tin and/or zinc and/or silicon and/or nickel and/or manganese and/or copper and/or aluminum and/or one or more of their oxides and/or one or more of their carbides and/or one or more of their nitrides and/or carbon].

11. (Amended) [Process] The process according to Claim [10, characterized in that a] 24, wherein the filled wire [with] has a covering of copper and/or tin and/or zinc and/or aluminum and/or their alloys [is used].

12. (Amended) [Process] The process according to [one of the preceding claims, characterized in that] Claim 6, wherein, in addition to a filled wire, a solid wire[, preferably made from CuA18,] is used as the spraying compound.

13. (Amended) [Process] The process according to [one of Claims 6 to 12, characterized in that] Claim 6, wherein the sliding region [(3)], prior to the application of the coating [(4)], is roughened[, preferably sand-blasted] and degreased.

14. (Amended) [Process] The process according to [one of Claims 6 to 13, characterized in that] Claim 6, wherein the coating [(4)] is stamped after it has been applied.